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AVIATION

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VOLUME XXI

NUMBER 17

SPECIAL FEATURES

THE FLIERS' ASPECTS OF AEROGRAPHY
THE OPERATIONS OF THE COLONIAL AIR TRANSPORT
THE DURABILITY OF METAL PROPELLERS

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OCTOBER 25, 1926

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A PREDICTION REALIZED

The New Curtiss "FALCON"

DURING the past several months, the first group of Curtiss "Falcons" to be delivered to the Army have been undergoing service tests in the hands of Air Corps pilots. As was foreshadowed when the "Falcon" won first prize in the Observation Competition at McCook Field, this new observation airplane has rapidly gained favor with the flying personnel, who have found it much faster and more maneuverable than the present service type.

Powered with either the Curtiss D-12 or the Liberty motor; excellent from a maintenance standpoint; with a truly remarkable performance, the "Falcon" fulfills its advance indications of being the finest observation type in service today - a worthy "big brother" to the Curtiss "Hawk", the standard service pursuit plane of the U. S. Services.

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The Air Mail Pioneers

THAT THE Post Office Department intends eventually to hand over the operation of the Trans-Continental Air Mail Service to a private operator has long been well known. Announcements to this effect have been made by Postmaster General New on several occasions and his reiteration of his plans in this connection only the other day merely go to confirm this fact and serve to indicate that the proposal is being given considerable thought at this time.

The idea is an excellent one. There is no doubt that it will eventually be very much better to have the Trans-Continental Air Mail Service operated by a reliable private company than, as at present, by the Government. In the first place, the Post Office Department has never operated its own mail carriers and there is no real reason why it should do so under normal circumstances in the case of air transportation. Secondly, the handing over of the New York-San Francisco air mail service and the New York-Chicago night air mail to a private operator will represent a reduction in Government expenditure which must eventually affect the taxpayer. Furthermore, from the standpoint of its usefulness, the operation of these two all important trunk air mail routes by private enterprise will mean that they will become of greater utility to the business public since under private operation, passengers and express will eventually be carried, whereas under Government operation it would not be possible for the services ever to become more than mail systems.

But, in the business of finding the satisfactory operator of the Nation's now World-famed Trans-Continental Air Mail Service, Postmaster General New has no small task, for upon his choice of a contractor rests the responsibility of ensuring the continuity of a service which has become of very vital importance to the Country's business. When the Department relinquishes this service, it will be turning over the last leaf in the history of one of its greatest triumphs. Seldom has an organization, either Government or business, carried through an undertaking with such success. The Post Office Department has been a pioneer in commercial aviation not only for this Country but for the World, for the respective aeronautical groups of all the nations have taken cognisance of the activities of the Air Mail Service of the United States Post Office Department. No small amount of credit for the pioneering work which has been done is due Col. Paul Henderson, formerly Second Assistant Postmaster General in charge of the Air Mail Service, and now general manager of the N.A.T., while the Hon. Irving Glover, the present Second Assistant, has brought renewed vigor and life to the operations of this pioneer air service.

In a recent statement regarding the service made by the Post Office Department, it is very rightly stated that: "It is felt that the work of the Department in this direction has pushed commercial flying in America several years ahead". This achievement is to be cherished and the Postmaster General is to be commended upon the care he is exercising in the matter of handing the operation of the Country's backbone air mail service over to a private organization. The Postmaster General wishes to retire from air mail operation but fully realizes the obligations his Department has undertaken.

Modified Regulation

THERE HAS been no subject regarding aeronautics that has been considered with such genuine open-mindedness as the new regulatory rules that have been formulated by the Department of Commerce. When they were first issued, a gasp of astonishment was heard in the whole aviation community. As sent out, they were undoubtedly crude, drastic and in many parts very hastily drawn. But the publication of the whole proposed measures in AVIATION has stirred those who should be interested and it is gratifying to note that so much dissatisfaction has been expressed that a completely new and much less severe code is being prepared. All branches of the aircraft industry, as well as the technical experts, have come to the front with criticism and suggestions. And what is equally pleasing is the attitude of Asst. Secy. MacCracken who has made every effort to secure all the best advice that was available before redrafting the rules.

The above is stated so that those who have written letters to this publication making constructive suggestions will know that these letters have not been published because so many suggestions that were made are sure to be adopted in the redraft that will soon appear. It is that draft that will have to be considered with the greatest care and caution. If the new regulations do not come up to the expectations that have been aroused, it will be time to print the parts of the letters that have been received that have in them suggestions which have not been covered.

The principal suggestion that has been made generally is that the rules be simplified and made clearer. There appears to be a tendency to wish to do too much at the start. In a science that is changing and progressing as rapidly as aeronautics, a very simple and elastic set of regulations would serve until experience called for greater specialization.

Again, it cannot be too strongly urged, that this movement be watched with the greatest care. It will be too late to make suggestions when the regulations are promulgated by the Secretary of Commerce. Therefore, our readers may expect that they will be kept advised of every change so that they may act with full information.

The Fliers' Aspects of Aerography

*The Structure of the Air**

By ALEXANDER McADIE
Director, Blue Hill Observatory, Harvard University

MAN LIVES in the air, skims the sea and walks on the land. Because he now flies through the air, he should know as much as possible about the medium in which he is immersed. Man is also a machine breathing the air.

We are not concerned in these short talks about breathing except when it comes to altitude records and the necessity of supplying additional oxygen. The flier has his lungs and the plane has its engines. To get maximum performance and efficiency at high levels, a tank of oxygen is needed for one and a compressor for the other.

Air is a Mixture

The chemical constituents of our atmosphere are Nitrogen, Oxygen, Carbon dioxide, Argon, Helium, Krupton, Xenon, Neon. There is no evidence of Hydrogen, barring some meteorites. Air is a mechanical mixture, not a chemical compound. Four-fifths of the air is Nitrogen and other fifth mostly Oxygen. But there are two additional quantities, independent variables, water vapor and dust, both important as affecting aviation. In fact, it is water vapor that is responsible for most of a fliers troubles. Fog, poor visibility, snowstorms, thunderstorms, are all manifestations of change of form of water. If there be extreme dryness, parts of the machine are warped; if too damp, there are bad effects. The plane or airship may get an ice coating and the load be so great that there is a forced landing.

Contrary to expectation and to some degree contradicting fundamental equations in physics, the atmosphere is not homogenous. Pressure, temperature and even density do not decrease as we go up, at a fixed and uniform rate. Equations based on laboratory experiments it should be remembered are often of limited application. We cannot regard the atmosphere as a single layer. Tidal equations cannot be applied. The atmosphere is actually a series of airspheres; and these are not exactly concentric shells. Not only do we find stratification or layers; but even striation.

We know of two distinct shells—the lower or troposphere, a region of turning, also of convection about ten kilometers or six miles thick in our latitudes. This is the layer in which weather occurs. An upper shell is the stratosphere, or so-called isothermal region in which temperature does not continue to fall with increase in altitude.

Altitude Records

Half a dozen fliers have half reached the stratosphere or have gone a slight distance into it. Our own American airmen were the earliest to pierce this upper airsphere. Schroeder, in 1918, reached 8809 meters; Rohlfs, in 1919, made 9357 meters; Macready has reached it several times, in January, 1926, making 11,797 meters; and in March, 11,454 meters. Several Europeans have made it and the record height at present is held by Calizzo, 12,066 meters.

All of these pilots have gone beyond the limit of cloud formation. In other words, they passed through and beyond the region in which weather occurs. It is bitterly cold up there but there are no changes.

The lower airsphere, the troposphere, bulges up at the equator and contracts at the poles. If Commander Byrd could have stopped long enough when he was at the North Pole to make an altitude record, he would have passed through the troposphere at 4000 meters and into the stratosphere. On the other hand, at the equator he would have to go up 17,000 meters to get into the isothermal layer. Byrd, however, did make a record round-the-world flight in that, he went around the world in about five minutes, certainly a record in terrestrial circumnavigation.

Pressure and Temperature

A pilot can get pressure and temperature by direct reading but there is no instrument to tell him the density of the air. It happens that at 8,000 meters the density is practically constant over all the globe. Above this height, air is denser over the equator than over the poles. In fact, density appears to be a function of pressure and temperature in low levels but not in high levels. Hence two words have been introduced into the language—barosphere and thermosphere—one to represent the region where pressure controls, and the other for the region where density is a function of temperature.

Table I gives average values and lapse rates for pressure, temperature and density.

Meters	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
Density in grams per cubic meter	1100 110	1000 110	900 100	810 90	730 80	655 75	590 65	530 60	475 55	425 50
Pressure in kilobars (kbs)	900 120	800 100	705 95	620 85	545 75	480 65	420 60	360 60	310 50	270 40
Temperature Freezing is 1000 and each grad is 1/1000 of volume. To convert to F. divide by 2 and add 32.	1030 20	1010 20	990 20	970 20	950 20	925 25	905 20	875 20	855 20	830 20

A pilot need not expect to find exactly these values in any given flight, for they vary with latitude, month of the year, hour of the day, and the particular structure prevailing at the time. They will vary with passing "high" and "lows".

Table II gives, in abridged form, the results of a recent international ascent (Munich, December, 1925). It will be noticed that the lapse rate even when close to the stratosphere 16,000 meters, is not uniform.

TABLE II

Altitude	*Pressure*	*Temperature*
500 m.	961	975
1000	900	963
2000	789	939
3000	689	914
4000	600	905
5000	521	887
6000	453	865
7000	391	844
8000	336	822
9000	289	817
10000	247	802
12000	181	800
14000	132	792
16000	95	780

*For those not familiar with scientific units and symbols the following conversion values will be convenient. A meter is 39.37 in., or 3.28 ft. A foot is practically 3/10 of a meter. A millimeter (mm) is the thousandth part of a meter. Roughly, it is 1/25 in. A line of type in AVIATION is about 90 mm. long and 2 mm. high. A micron (u) is 1/1000 of a millimeter. We use it in measuring dust and very small particles.

In spectroscopic work, still smaller units are used, the mu (millimicron) which is a millionth of a millimeter. The Angstrom is a ten-millionth of a millimeter. Physicists write it cm^{-8}, meaning .000,000,01 centimeter. A gram (g) is about 15 grains (gr.); a kilogram, 1000 grams, is 2.2 lb. Remember also that 1 meter per second is about 2.2 m.p.h. A kilometer is .62 mile. A mile is 1.6 kilometers. One mile an hour is 0.4 meters per second; 1.5 ft. per sec. is 1.6 km. per hr. One foot-pound is 138.25 gram centimeters. One horsepower is 550 ft. lb. per sec.; or 746 watts. A kilowatt is about 1⅓ hp. Atmospheric pressure is now recorded in units of force. The megadyne (one million dynes) or megabar atmosphere is the barometer reading 29.531 in. or 750.1 millimeters, at freezing, and in latitude 45 deg. The force of gravity or weight of one gram is 980.66 dynes. To convert kilobars (kbs.) or (mbs) into inches, multiply by 0.03. To convert kilobars (kbs) or (mbs) into millimeters, multiply by 0.75. To convert inches into kilobars (kbs) or (mbs), multiply by 33.86.

Three Months Operation of Colonial Air Transport

Boston-New York Air Mail Service Operating as a Sound Transportation System. Many Valuable Lessons and Much Experience Being Gained.

ON SEPT. 30, the Colonial Air Transport, Inc., completed the first three months of actual mail-carrying operations between Boston, Hartford and New York; connecting with the trans-continental United States Air Mail service from Hadley Field at New Brunswick, N. J.

The route used by the Colonial Air Transport Company has been in effect a test line for gaining experience in commercial aircraft operations under all the varying conditions found on the New England Coast. There is undoubtedly no more difficult stretch of country for the use of aircraft to be found in America. The weather conditions surrounding this particular territory are most unreliable. Rain, fog and high winds, unusually rough ground surface, and short hours of daylight, are a few of the obstacles which must be overcome.

The pioneer founders of this air mail route between Boston and New York were fully conversant with the difficulties which beset them but decided to undertake this particular route feeling that if they met with any measure of success that they would be able to face the operating problems that would be encountered in any other locality in the country.

Major Gen. John F. O'Ryan, Pres. Colonial Air Transport, Inc.

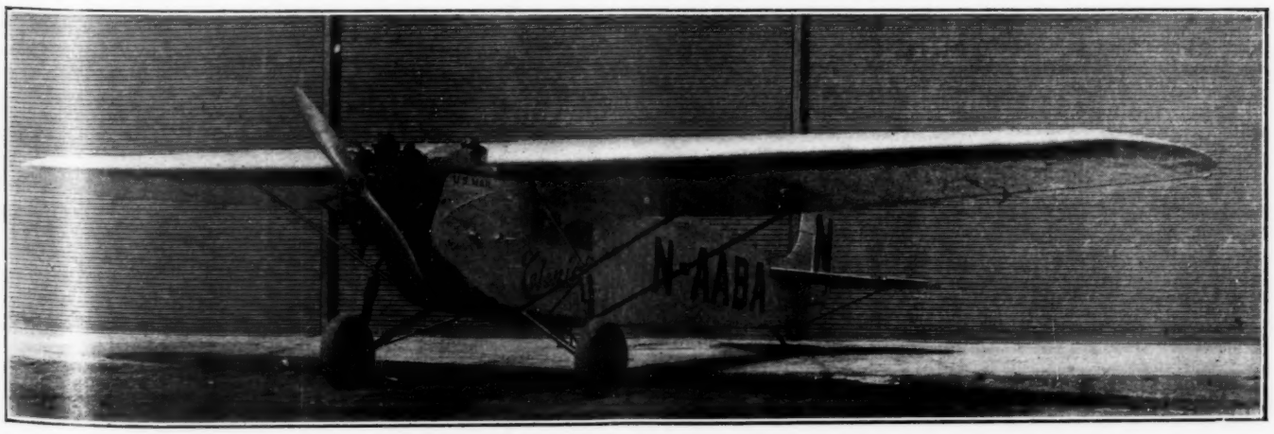
During the past three months operation, a complete skeleton organization has been created which will be extended to cover new routes and increased services at the discretion of the directors. A complete cost accounting and office system has been installed which is a replica of similar systems used in standard transportation practice, adapted to air transportation operations. The entire system of operation for this route need only be amplified to cover a route of any length. Plans are under way to include carrying express, air freight and passengers in addition to airmail under the present Post Office contract.

To a great extent the preliminary organization of the company was under the direction of J. T. Trippe, managing director and active executive head, whose untiring efforts have been largely responsible for bringing the company to its present state of operating efficiency. Since July 1, the planes of the Colonial Air Transport, Inc., have covered 43,785 miles, having flown 486½ hr. without a single forced landing due to mechanical failure. The weather conditions in this area were far from ideal this summer, there being an unusual prevalence of fog and ground haze accompanied by high winds and rain. Notwithstanding this handicap of bad weather, it has been possible for them to maintain a schedule of 87 per cent efficiency of trips completed. According to Mr. Trippe, it will be entirely possible to maintain a 96 per cent efficiency of trips completed throughout the year with the use of efficient radio communication, adequate lighting, and the multi-engined equipment now under construction. To carry on the initial development, a fleet of five planes has been maintained by the company. To date the entire operations have been carried on with two Fokker Universals and one Curtiss Lark, all powered with the Wright Whirlwind air-cooled 200 hp. radial engine. These planes can carry a payload of 800 lb., which correspond to a useful power loading of 4 lb. per hp. The goal to which all air transport companies are heading is to maintain equipment capable of carrying the maximum payload in pounds and maximum cubic displacement of cabin or cockpit per horsepower, with the minimum cost per scheduled ton and passenger mile.

The traffic operations for Colonial have been in the charge of F. C. Arnault, formerly an official with the American Shipping Board. He brought to this company a wide range of experience in securing and handling passengers, freight and express. At the present time, Arnault has four assistants who have been carrying on active solicitation and survey work. This department has been especially concerned with survey work looking to the expansion of operations.

The field operations have been under the direction of Major C. H. Biddlecombe, who was head of the Air Transport Division of the Department of Civil Aviation of the British Government, up until he accepted the present position with the Colonial Air Transport, Inc. This work consisted in supervising the operation of the Imperial Airways, and as a result of the extensive knowledge gained through six years practical experience, in commercial operations in Europe he is exceptionally qualified to assist in the development of this new art in America.

Due to the fact that 29 per cent of the troubles in water-cooled engines ordinarily used were due to the water-cooling



One of the Colonial Air Transport Fokker Universals (Whirlwind)

The Curtiss Lark (Whirlwind) of the Colonial Air Transport. This plane carries the registration, N-AABC

systems, it was decided to use the Wright air-cooled radial engine as the most economical for commercial air transportation. From close observation of the service so far obtained from the engines now used, it should be possible to operate the Wright Whirlwinds for 300 hr. without overhaul. An arbitrary figure, however, calling for an overhaul at the end of 250 hr. as being an efficient operating maximum, has been set. Each engine is inspected every 2½ hr., and given thorough and complete attention to the details of oiling, etc. If the route were longer, it would be possible to extend the inspection period to once every ten hours, but due to the short run between Boston and New York, it is necessary to maintain the shorter vigilance period. The Fokker Universal N-AABA has flown 151 hr. The N-AABB has flown 156½ hr., and the Curtiss Lark N-AABC has flown 179 hr. without the slightest sign of engine trouble. These three Wright Whirlwind engines will continue to operate until they have had at least 250 hr. before an overhaul will be made.

In order to render the service to the business communities of New England using air mail, the Colonial Air Transport will continue to operate on the new night schedule on the Boston to New York run, connecting with the night air mail on the trans-continental air route. To do this, it has been necessary for them to install a $30,000 lighting system over the route. This will include General Electric revolving beacons at intermediary points and complete lighting facilities with B.B.T. 500 million candlepower floodlights at the terminal air-ports. This system is being placed in service by the Colonial Air Transport in cooperation with the Department of Commerce, and it is expected that the Department will take over the operation of the night flying equipment when funds have been made available.

Major Gen. John F. O'Ryan has taken active executive charge as President of the Colonial Air Port, Inc. He is at the present time planning for an expansion and increase of service. W. Irving Bullard, formerly President of this company, is now Chairman of the Executive Board. J. T. Trippe, former Managing Director is Vice-President, Capt. L. L.

Executives of Colonial Air Transport, Inc.
Left to right; John H. Trumbull (Governor of Connecticut), member of the Board of Directors; Juan T. Trippe, vice president; W. Irving Bullard, Chairman of the Executive Committee.

Odell, Secretary, and Major T. O. Freeman of Hartford is Treasurer.

There will be no immediate change in the Board of Directors which include Governor John H. Trumbull of Connecticut, Chairman, Colonel John A. Hambleton, William A. Rockefeller, C. V. Whitney, Howard Coonley, Harris Whittemore, Jr., Colonel Leonard Horner, Major Lorrillard Spencer, and Robert G. Thatch, Theodore Weicker and other prominent men.

At the present time technical developments for radio communication from the ground to the airplane and from the airplane to ground stations, are under way. This will enable those in charge of operations to keep in continual communication with the pilot and radio mechanic, giving him weather reports and receiving information during the course of flight.

The officers of the Bureau of Aeronautics in cooperation with the Colonial Air Transport made it possible for the Los Angeles, the large Navy airship from Lakehurst, N. J., to make a series of flights over the New England Coast to calibrate the Navy radio compass stations so that they would be able to give accurate bearings from their shore sectors, thus giving the Colonial planes their location at all times during flight. This work was recently completed, and during these flights, Col. John A. Hambleton and J. T. Trippe of the Colonial Air Transport, Inc., were aboard the Los Angeles as official observers.

Capt. Campbell Awarded Schiff Trophy

The Herbert Schiff Memorial Trophy, for the year 1926, which was won by Capt. H. D. Campbell, U.S.M.C., was presented Oct. 16 to the winner by President Coolidge.

This trophy is awarded each year to the pilot, in the Navy or Marine Corps, who attains the highest number of flying hours for the year. Captain Campbell's flying time totalled 839 hr. 40 min., not only a record for the Navy and Marine Corps but also the Army, and, according to officials of the N.A.A., the record for the world.

Capt. H. D. Campbell, U.S.M.C.

Captain Campbell's native state is Vermont. He is 31 years of age, married and has two children. He received the degree of C.E. from the Norwich University in 1917. He entered the Marine Corps April 7, 1917 and served with the famous Second Division in the Verdun trenches at Belleau Woods, Chateau Thierry, Blanc Mount and all major offenses of American participation in the World War, until wounded Oct. 4, 1918. He arrived in France with the first U.S. troops to set foot on French soil. He entered into Marine Corps aviation July 1, 1921.

He was stationed at Pensacola, Fla. as student in 1921, instructor, 1922; Port Au Prince, Haiti, 1923; Santo Domingo City, 1924; San Diego, Sept. 1924 to present time.

During the period from July 1, 1925 to July 1, 1926, along with his regular duties he organized air mail service to and from Santa Barbara at the time of the earthquake, made a Trans-continental flight from San Diego, to Pensacola, made cross-country flight to San Francisco on Navy Day and had a forced landing under difficult circumstances with no damage or injuries, received letter of commendation from Secretary of Navy for making highest free machine gun score from a field of 460 contestants.

Captain Campbell has been instructing in flying almost continually for five years and has never failed to qualify a student and has never lost a single pilot whom he has taught to solo.

The Herbert Schiff Memorial Trophy for U. S. Navy or Marine Corps pilots is awarded in memory of the young naval reserve flier killed in line of duty in July, 1924. The award, according to the terms of the committee, headed by Rear Admiral W. A. Moffett, Chief of the Bureau of Aeronautics, U.S.N., is made to that naval flier who compiled during the year ending June 30, the highest number of flying hours, without serious accident to personnel or material.

The trophy is a silver cup, surmounted by an eagle and bearing an outline of a flying boat.

Captain Campbell flew to Washington to receive the trophy from the hands of the President. He left San Diego at 9:00 a.m. Oct. 10 and arrived at Bolling Field on Oct. 14 at 4:15 p.m.

P.R.T. Air Service 97% Efficient

The Philadelphia Rapid Transit Air Service, Inc. started carrying passengers between Philadelphia and Washington on July 6, using a Fokker plane powered with three Wright Whirlwind engines. On July 16 another plane was put into operation and on Sept. 15 the service was extended to Norfolk, Va. and a third plane added to the service. The Philadelphia terminal is situated at Mustin Field right next to the Philadelphia Sesquicentennial grounds and at Washington, Hoover Field is used. The terminals have been attractively fixed up and the service has been well advertised especially in Philadelphia and all seats in the planes have been booked up well in advance. The schedule has been maintained 97 per cent efficient which is exceptionally good for a passenger carrying line and it is interesting to note that although 44,240 miles have been flown there have been no forced landings due to engine failure. The following schedule is that of operations from July 6 to Sept. 27.

	No. of Scheduled Trips	*No. of Trips Started*	*No. of Trips Completed*	*No. of trips abandoned after return to airport due to unfavorable weather*	*No. of trips cancelled due to unfavorable weather*	*No. of landings en route due to unfavorable weather*
Phila-Wash	153	149	147	2	4	0
Wash-Phila	153	150	148	2	3	2
Phila-Wash-Norfolk	15	15	15	0	0	1
Norfolk-Wash-Phila	15	15	15	0	0	0

	No. of forced landings due to Engine Trouble	*No. of Special Trips*	*No. of special trips completed*	*Miles Flown*
Phila-Wash	0	2	2	17,880
Wash-Phila	0	2	2	18,000
Phila-Wash-Norfolk	0	1	1	4,240
Norfolk-Wash-Phila	0	0	0	3,975
Norfolk-Wash	0	1	1	145—Total 44,240

	No. of Pass. Carried	*Pass. Mi.*	*Mail Carried*
Phila-Wash	1061	127,320	325 lb.
Wash-Phila	968	116,160	234 lb.
Phila-Norfolk	1414	3,710	
Norfolk-Phila	15	3,975	
Wash-Norfolk	21	3,045	
Norfolk-Wash	34	4,930	
Total	2113	259,140	

The Durability of Metal Propellers

Metal Propellers, Like All Types, Need Inspection. Overlap in Multi-Engine Planes Causes Excessive Vibration and Strain.

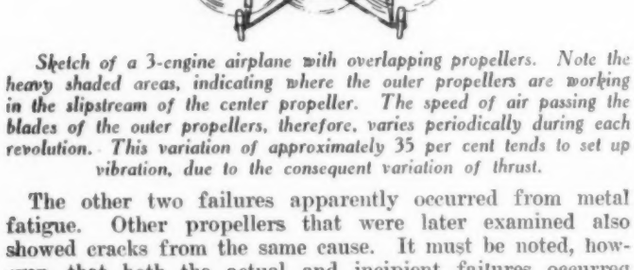
By T. P. Wright

EVER SINCE metal propellers have come into practical use, there has been much speculation as to their life. It is a well established fact that metal is subject to fatigue under certain stress conditions, but whether or not duralumin propellers would be affected by such conditions, and if so, how soon, has been a question of which very little was known.

During the past three years more than a thousand metal propellers have been built in the United States, and the great majority of them have piled up records of hundreds of hours of service without signs of trouble. Very recently, however, failures of three metal propellers have caused a certain amount of comment and apprehension among pilots, and a careful study has been made of these failures, both by the manufacturers and by technical bureaus of the Government.

Trouble Caused By Overlap

Two failures occurred on single engined machines with flying time of several hundred hours, and one on a comparatively new propeller. This latter failure, however, occurred on a three-engined machine where the propellers had considerable overlap. It has long been recognized that the overlapping of propellers causes undue strain because of the varying forces of the slip stream. (Note the accompanying illustration.) United States military practice, as well as general European practice discourages such construction. Therefore, as applied to the general problem, this failure can be discounted, as it is an open question whether any propeller can be made strong enough to withstand the stresses caused by overlapping.



Sketch of a 3-engine airplane with overlapping propellers. Note the heavy shaded areas, indicating where the outer propellers are working in the slipstream of the center propeller. The speed of air passing the blades of the outer propellers, therefore, varies periodically during each revolution. This variation of approximately 35 per cent tends to set up vibration, due to the consequent variation of thrust.

The other two failures apparently occurred from metal fatigue. Other propellers that were later examined also showed cracks from the same cause. It must be noted, however, that both the actual and incipient failures occurred after long service, and on propellers which were among the first manufactured. As is natural, many improvements have been made since then, all of which tend to strengthen the propeller. For instance, on the early propellers, the hub bolt holes were not chamfered, but were left with sharp edges. Engineering tests later proved that such sharp edges weakened the propeller, and this was further substantiated by the fact that all cracks so far discovered originated around these holes. Chamfering has become standard practice on all propellers and can be done easily on the old ones. While this may not eliminate the trouble entirely it will unquestionably lengthen the life of the propeller.

In connection with the failures above referred to, the following quotation from a technical note of the Bureau of Aeronautics on the "Care and Adjustment of Metal Propellers" will be of interest:

"There have been failures of propellers of this type, although, as far as is known, they have been very few in number and limited entirely to the first propellers manufactured. It is confidently believed that no difficulty will be experienced with them in the Army or Navy. One case of failure occurred on an Air Mail plane. The propeller had had 667½ hr. of satisfactory flying without showing any signs of trouble and then broke in the air. Both blades tore away from the central portion.

"A careful examination of the broken blades made by the Bureau of Standards reveals that the break was a typical fatigue fracture and took place across the hub bolt holes. This area of the propeller is covered by the hub blades and, therefore, would not be visible unless the crack extended to the edge of the blade."

Examination of several propellers has definitely established that they do not break all at once, but start to crack progressively, and that in the early stages these cracks cannot be detected by ordinary inspection methods. Therefore, there has been developed a practical process of inspection, known as etching, which can be done on the field and which will show up clearly even the smallest cracks. The etching process consists of bathing the central portion of the blade, where the bolt holes are located, with sodium hydroxide, and later wiping off with nitric acid. This cleans and slightly etches the blade, and shows up very clearly any cracks that may have started. Periodic inspection by this method, therefore, will assure the operator that his propeller has not started to develop fatigue failure.

The above mentioned improvements and inspection will relieve the present situation, and it is believed that the present type of propeller will continue to be entirely satisfactory for certain types of engines and planes.

Twisted Slab Propeller Obsolete

It must be remembered, however, that the twisted slab type of propeller, (the type referred to in the above discussion) was developed to accommodate the old type of war surplus propeller hub, primarily designed for attaching a wooden propeller to the crankshaft. The use of these old hubs greatly reduced the price of the propellers, so that the twisted pipe of propeller was really an economic and emergency measure, rather than the ideal type. Present military procurement practice in the purchase of engines eliminates the old style hub. This has stimulated the design of a new type of propeller with a solid forged hub which can be directly attached to the crankshaft.

Such a propeller has been under development for some time. It was first used, with complete success, on the 1925 Pulitzer and Schneider Cup Races that were built for the Army and Navy. The manufacture of this type for both military and commercial use is being expedited in every possible way, and production on a quantity basis is promised for the very near future. It has been established that the new type is superior to the twisted type in all respects and it is believed that it will prove to be the ideal propeller—one which cannot fail under normal operation.

August Record in German Air Transport

More than 1,000,000 km. were flown by the 120 planes of the German Luft Hansa Company in August in the course of the regular service on its sixty-four lines. Not less than 7300 starts and landings were carried out each day. About 38,545 km. were covered in this manner daily by the Luft Hansa machines, in addition to many pleasure trips and special flights. Now, the new autumn schedule has come into force, comprising fifty-three lines, of which forty-eight are operated by the Luft Hansa. On seven routes the German company cooperates with British and French companies.

The Fairchild FC-1 Monoplane

A Commercial Closed Cabin Monoplane With Folding Wings. Wing Flaps an Interesting Feature of the Machine

THE DESIGN of an airplane for commercial purposes has now become a very specialized form of aircraft production and the days when one basic design was made to fulfill all requirements by the application of minor alterations where necessary have now passed. According to whether an airplane is to be employed in mail transportation or in cotton dusting or in aerial survey work, or etc., so the particular requirements are borne in mind in the layout of the entire design. It was to be expected, therefore, that when the Fairchild Airplane Manufacturing Corp. of Farmingdale, L. I. set out to produce an airplane which, while being a general all-round commercial machine, should be peculiarly adapted to aerial photographic work, they should meet with singular success. As is generally known, the Fairchild Airplane Manufacturing Corp. is owned and controlled by the Fairchild Aviation Corp., which also controls the Fairchild Aerial Camera Corp., Fairchild Aerial Surveys, Inc. and the Fairchild Fying Corp., in addition to the Fairchild-Caminez Engine Corp. The Fairchild interests have had a very great deal of experience in the manufacture and operation of aerial cameras and in aerial survey work in general, and in the FC-1, the recently produced cabin monoplane, every facility has been provided for the aerial photographic work for which the machine was primarily designed.

Closed Cabin Arrangement

The machine will be remembered as having made its first real public appearance on a large scale in the Airplane Reliability Tour in which it performed very satisfactorily. The fuselage of the machine is of welded steel tube construction and changes in section from rectangular at the cabin to triangular with the single longeron on top at the rear. There is an entire absence of bracing wires in the fuselage construction. The cabin is very comfortably arranged with the pilot in front where he has an excellent unobstructed view ahead and on either side. The windows slide and are easily opened or closed. Experience has proved that, in good weather, flying with the side windows open is pleasantest since this provides the best ventilation for the cabin. The machine carries four passengers, entrance to the passenger section of the cabin being by a door on each side of the fuselage while a forward door is provided for the pilot. The fuselage covering is of fabric. The plane is designed for the Fairchild-Caminez engine but when equipped with the OX-5 only two passengers are carried.

The monoplane wing, which is made in two sections in addition to the center section, is constructed of wood, with spars of built-up box type and wooden built-up ribs. The load factors for the wing are, high incidence—6.5 and, low incidence—4.5, these figures having been calculated on the basis of a 200 hp. engine and carrying four passengers. Undoubtedly one of the most interesting features of the FC-1 is the folding wing arrangement which is so valuable in any small commercial airplane. The system employed does not entail any trouble or a great deal of time for the folding operation. Nor are any extra struts needed when the wings are folded. It is even said that in actual trials two men folded the wings completed in 1 min. 8 sec. and placed the machine in flying order again in 1 min. 14 ½ sec. With the wings folded the machine will pass through a doorway 12 ft. wide and 10 ft. 2 in. in height. The plane is thoroughly braced and rigid with the wings folded.

But, what is in many respects of even greater importance in connection with the folding operation is that no disconnection of the control is necessary, which appears to be one of the most valuable points in connection with this feature of the Fairchild plane. In the flying position, the wings are locked by a heavy pin and, as a further safeguard, the handle throwing the pin in and out is locked in position by means of a Yale lock. The aileron control is by means of push and pull rods with a short cable connecting the rods to the ailerons. Ball bearings are employed.

Ailerons and Wing Flaps

The ailerons extend the entire span of the wing and are employed as wing flaps for altering the effective camber of the section. By the operation of a hand lever at the left of the pilot's seat, the flaps can be raised or lowered simultaneously without in any way interfering with the effectiveness of the flaps as aileron control surfaces. Slightly raising the flaps reduces the effective camber of the wing and improves the high speed qualities of the section, while depressing the flaps renders the lift coefficient greater for climbing. Lowering the flaps to a considerable extent reduces the landing

The Fairchild FC-1 monoplane (Curtiss OX-5) with wings folded

The Fairchild FC-1 monoplane (Curtiss OX-5)

run of the plane appreciably owing not only to their braking effect but to the greatly increased lift coefficient of the resultant highly cambered section.

Extensive flight tests have shown that for high speed the flaps should be set at from 2 to 4 deg. up and for best climb they should be neutral at ground level. As altitude is made, the best climbing condition is obtained with the flaps depressed an increasing amount, reaching from 10 to 12 deg. at the ceiling—about 10,000 ft. The slowest landing speed is obtained with the flaps depressed 14 deg. in the glide and 20 deg. when on the ground (this is, of course, due to the combination of air braking effect and ground cushioning effect). It has been found that in taking off with the flaps neutral in the run and down 6 deg. when actually leaving, the shortest take-off distance was obtained.

Longitudinal Balance Constant

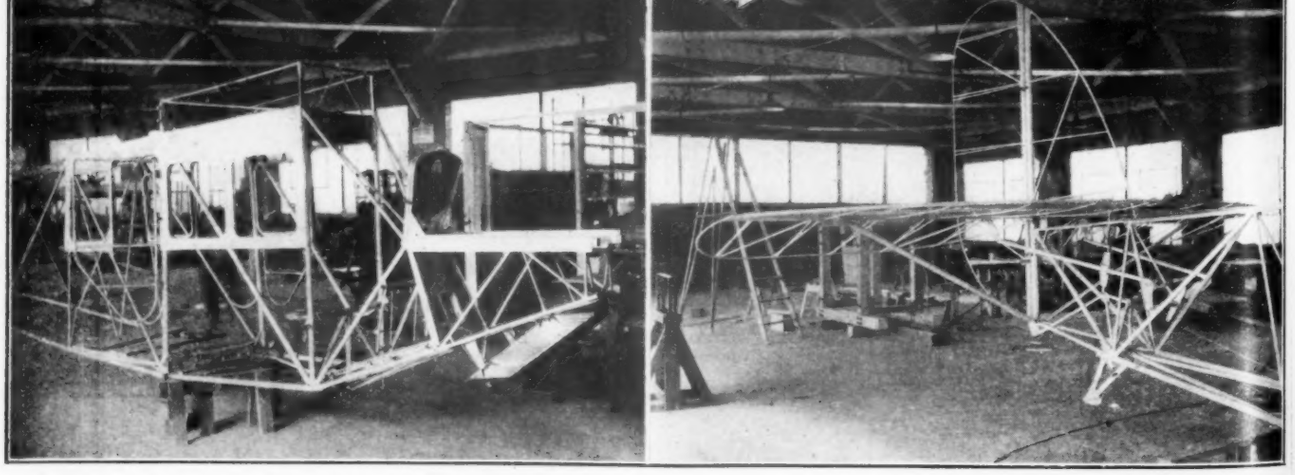
In order that the longitudinal balance of the plane should not be upset by the alteration of the effective camber of the wing by means of the flaps and the resultant change in the disposition of the center of pressure, mechanism has been provided whereby a change in the flap angle effects a change in the stabilizer setting. Consequently, the operation of the flaps puts no extra requirements upon the pilot in controlling the machine.

The tail surfaces of the FC-1 are of steel tubing, fabric covered. The stabilizer is adjustable in flight by means of a hand lever on the right of the pilot's seat. This is quite apart from the automatic control of the stabilizer setting with changes in flap setting. The manufacturers believe that the use of a lever for stabilizer alteration more easily defines the stabilizer position at a glance than does a wheel. The vertical fin is offset in order to counteract propeller torque in flight. All elevator controls are doubled.

The landing gear is of conventional design of the split-axle type. The tread is 80 in. and rubber cord shock absorbers are employed. Arrangements have been provided for the fitting of skiis for winter flying if required and, furthermore, a pontoon landing gear has been designed for the machine. This can be employed when at least 150 hp. is available in the engine. The propeller clearance is as much as 33 in. with the tail down and 19 in. in flying position, which, with the divided axle of the undercarriage, is a very important point in connection with landings upon rough ground with tall undergrowth. The tail skid is steerable and as a precaution against accidental breakage, there is provided an auxiliary skid for the protection of the rudder.

The Fairchild FC-1 which was at Detroit in the Reliability Tour was equipped with a Curtiss OX-5 engine of 90 hp. But the machine may be equipped with the Fairchild Caminez engine of 150 hp.; the Curtiss C-6, 150 hp.; the Hispano Suiza, 150 hp.; or the Wright Whirlwind air-cooled engine of 200 hp. The OX-5 power plant is fitted with the Kreider-Reisner booster system, eliminating the danger of the hand cranking in starting. In addition to the regular throttle handle, an auxiliary throttle is provided in the cabin in the form of a button on the control stick, which is very useful in gliding or in taxiing. The radiator is of the underslung type. The entire gasoline capacity of 35 gal. is carried in the upper wing in a welded aluminum tank providing gravity feed of the utmost simplicity. Seven gallons of gasoline are also carried in a reserve tank.

In the design of the machine, very careful consideration was given to problems of aerodynamic efficiency and recourse was made to the wind tunnel at the Guggenheim School of



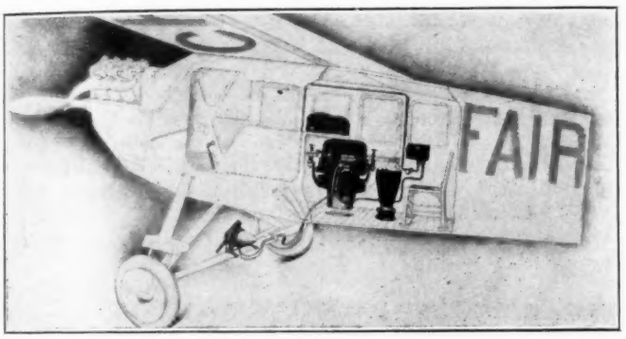
Two constructional views of the Fairchild FC-1. On the left, the forward part of the fuselage; on the right, the tail unit structure.

Aeronautics at New York University, under Prof. Alexander Klemin. The Gottingen 387 wing section which is employed has been modified and improved by design in plan form and in thinning the section at the tips. The object aimed at has been elliptical load distribution across the span, an ideal condition which, while it could not actually have been obtained in a wing of the form of that of the FC-1, has probably been approximated. The wind tunnel experiments showed the plane to have a very good L/D for the complete machine and the longitudinal stability is excellent, the plane trimming at cruising speed.

Wind tunnel tests directed towards a study of the lateral control characteristics have indicated that the aileron rolling moments are adequately powerful. With the ailerons set at their maximum angles and in slow speed, which represents the worst condition for lateral control, it was found that the yawing moments due to rudder were entirely adequate to balance and correct the yawing moments due to the ailerons.

Official Full Scale Tests

The full scale performance tests were carried out under the supervision of the staff of the Guggenheim School of Aeronautics, N. Y. University, with calibrated instruments, etc. To ascertain the true landing speed, tests were carried out with a chronograph attached to the wheels, which indicated



A diagramatic drawing showing the cabin arrangements in the Fairchild FC-1 when employed in photographic work.

the revolutions in a given time in getting away or in landing. The plane has been flown by a number of well-known pilots and all agree as to its ease of control. With the OX-5 engine only two passengers in addition to the pilot can be carried, in spite of the fact that the first plane to be constructed is believed to be no less than 200 lb. overweight. With the installation of the Fairchild-Caminez engine, 67 per cent more power will be available and the full load of four passengers can be carried.

General Details

The main characteristics of the OX-5 plane and the certified performance figures are as follows:

Span	44 ft.
Span (wings folded)	11 ft. 9 in.
Total wing area (including ailerons)	275 sq. ft.
Length	30 ft.
Height (ready for flight)	9 ft. 4 in.
Height (wings folded)	10 ft.

A front view of the Fairchild FC-1 with the wings folded, giving a very good idea of the small storage space required to house the plane. Incidentally, this is a very excellent view of a Hartzell Walnut propeller which is being used extensively in commercial flying.

Weight (light, with water)	1596 lb.
Load, as follows:	
Pilot	165 lb.
Pay load (2 passengers or freight)	330 lb.
Fuel and oil‡	240 lb.
Total useful load	735 lb.
Total gross loads in tests	2331 lb.
Wing loading	8.5 lb./sq. ft.
Power loading	26 lb./hp.
Capacity of fuel tank‡ (gravity feed)	35 gal.
Cubic capacity for cargo	60 cu. ft.

‡Since tests were made, a seven gallon reserve tank has been added, giving five hour cruising range, or 425 miles.

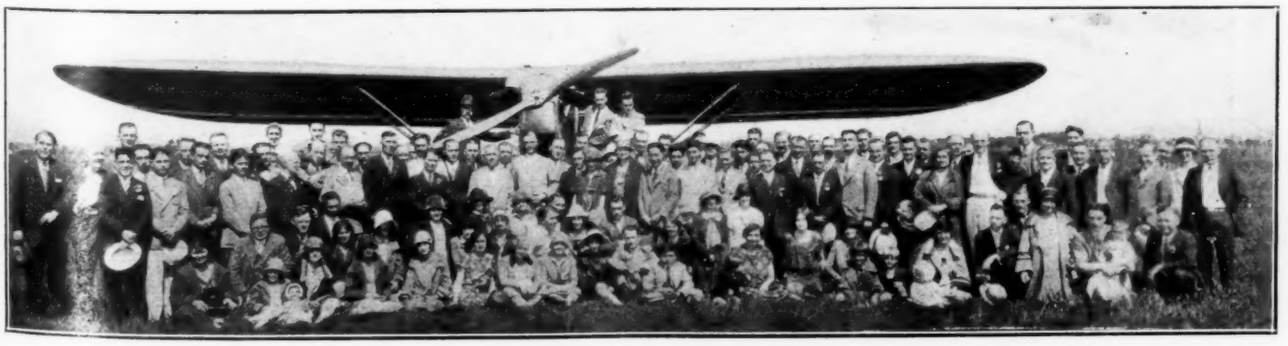
Performance

Performance with OX-5 engine and 735 lb. load:

Maximum speed (flaps up 2 deg.)	97.1 m.p.h.
Landing speed (using flaps)	40.0 m.p.h.
Landing speed (not using flaps)	42.5 m.p.h.
Landing run (using flaps)	131.2 yd.
Landing run (not using flaps)	143.0 yd.
Take off speed (using flaps)	37.0 m.p.h.
Take off speed (not using flaps)	38.0 m.p.h.
Take off distance (using flaps)	138.4 yd.
Take off distance (not using flaps)	159.5 yd.
Climb in first 10 min.	6200 ft.
Initial rate of climb (not using flaps)	620 ft. min.
Climb to 4000 ft. (flap setting increased to 4° down)	13.19 min.
Service ceiling (flaps increased to 8° down)	7800 ft.
Time to service ceiling	38.7 min.
Absolute ceiling (flaps down to 8°)	8640 ft.
Absolute ceiling (flaps down 12°)	9890 ft.

NOTE: It is expected that the performances in climb and ceiling will be considerably improved with the lightening of the machine by 200 lb., which is assured for production planes of this series.

The second annual outing of the executives and employees of the Fairchild Aviation Corp. was held recently with much success. The party included joy flights and athletic sports at Glenwood, L. I.



A group at the second annual outing of the Fairchild Aviation Corp.

A Trip over the Western Air Express

The Story of a Passenger on one of the Pioneer Passenger Air Services in the Country

By COL. THURMAN H. BANE

"LAS VEGAS and Salt Lake both report weather clear, no wind, visibility unlimited." This was cheering news as I hustled into my flying clothes, preparatory to flying from Los Angeles to Salt Lake City, via Western Air Express, Inc.

The Douglas Air Mail plane with its reliable old Liberty engine was getting its half hour warming up and going over preparatory to our flight. During this interval I took a hasty survey of the facilities at this airport. A beautiful level field at least one mile each direction. One large hangar, one well equipped engine overhaul shop, and one radio station. In the hangar were three Douglas mail airplanes and one was out on the line. I was informed that the company owned seven, the other three being at Salt Lake City. Until recently, three only were kept at each end of the line. The plan was to keep two in commission and ready to go each day, and one laid up for overhaul. No airplanes are kept at Las Vegas, and there is no hangar there—only facilities for providing the planes with gasoline, oil and water.

It was found desirable, however, to provide an extra airplane always available for miscellaneous trips, such as two recently made by Major C. C. Moseley, the manager of the line, who flew a newspaper man to Douglas, Arizona. He also flew Messrs. Evans and Wells a portion of their way on their recent record breaking round-the-world trip.

The engine repair shop is provided with facilities for overhauling two engines per month. and this work must be thoroughly done as this company is getting 200 hr. between overhauls out of their Liberty engines. They have been flying since April 17, 1926—173,000 miles to Sept. 1, with 100 per cent perfect operation—all mail on time. One has no hesitancy about flying as a passenger in such an outfit.

Mr. Cole, well known to all airmen who passed through San Diego in the old days, is field chief at the Los Angeles airport.

It is perfectly evident that Mr. Ford has no corner on cleanliness as this establishment is just as clean and orderly and efficient as the Ford Airport. This is an embellishment of any successful organization.

Leaving Los Angeles

But the hour of 7:40 a.m. approaches and as I must not delay the U. S. Mail, I climb into my place, which, by-the-way, in the Douglas mail plane is a most roomy and comfortable cockpit. The mail, 178 lb. on this trip, is in front of me and below my feet, as also are my numerous bags and camera. My parachute is fitted to me. I hope I won't have to use it. I tell Kelly the pilot if he wants me to jump to say so and out I go. I am not so sure the average lay passenger could get out of the plane in case it became desirable, unless one could drop the passenger like the gasoline tanks on the Douglas planes. I am not convinced of the usefulness of this releasable tank feature. However, the location of the gasoline tanks in the lower wings on each side of the fuselage is fine.

We pushed off a few minutes late, about 7:45 a. m. There was no fanflare of trumpets, waving of red flags, ringing of

Over the Black Canyon, 100 miles out of Las Vegas, in a Western Air Express mail plane.

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bells nor flashing of signal lamps to get us off. Air schedules are necessarily elastic; the direction and force of the wind have so much to do with the elapsed time of a flight, that there is nothing impressive to the initiated in too greatly emphasizing the time of departure. If the mail and passengers are aboard and the engine is warmed up I believe the Western Air Express might push off a few minutes earlier. [The next section of this article was written in the air.—EDITOR]

We were quickly in the fog but soon through it—not over 100 ft. thick I should guess. There is nothing but fog under us, toward the ocean, but the San Bernardino Mountains over or through which we must fly are plainly visible. There is a dry river on the left and the Union Pacific tracks on the right as we head for Cajon Pass. Fingers of fog stretch out toward the mountains, revealing in the clear spaces, the beautiful citrus orchards that add so much to the charm of Southern California. There are not many landing fields here as all the level and gently sloping ground is covered with orchards.

Airplane v. Railroad

For purposes of comparison I made a train schedule of the Los Angeles Limited which leaves Los Angeles at 10.51 a.m. daily. I have assumed, however, that for our purpose this train, the fastest between Los Angeles and Salt Lake, leaves Los Angeles the same time we do, 7:45 a.m.

At 7:57 a.m. we crossed the dry river which flows out of a closed canyon on our left. The mountains on the left are high and covered with trails and fire breaks. One trail leads up to a large "P" that some enthusiastic college men have formed on the side of the mountain. We are flying very close to the mountains on the left now. We have been steadily climbing at about the same rate that the ground rises. This is Cajon Pass and at 8.01 a.m. we pass the highest peak on the left and ridge after ridge of mountains, blue and lavender in the morning sun appear on the right. At 8:05 a.m., we cross a pine covered ridge—the summit—very close to the tops of the trees. It is surprising that the air can be so smooth so close to the mountains. I expect later in the day it will be churned up a little. Now the desert—miles and miles of it, flat and sandy on the left with miles of barren mountain ranges on the right. Below us a hospitable concrete ribbon and the railroad take our same general direction. The only habitations visible are yellow railroad section houses. The outline of former roads replaced by better grades can be plainly seen from the air. At 8:15 a.m., three smoke stacks appear dead ahead—a narrow strip of green—three minutes later we cross the *Mojave* River at Oro Grande.

Major C. C. Moseley, vice-president and general manager of the Western Air Express.

The country gets rougher. There are some mean looking peaks or buttes on our right, and as the wind is coming from our right rear these peaks churn up the air. The old plane weaves and strains at this disturbance, but it is quickly over. The desert is pox marked showing evidence of clearing and attempts at cultivation.

Passengers for Salt Lake City by Western Air Express weighing in.

Barstow is below at 8:40 a.m. We have been in the air 55 min., have covered 150 miles of the rail journey—about 100 miles as we and the birds fly. The Los Angeles Limited which left Los Angeles at the same time we did is just approaching Pomona and has made about 32 miles. The summit 3820 ft. is 62 miles ahead of them!

I asked Kelly if the river we just crossed was the Colorado. He assures me that we cross the Colorado after we leave Las Vegas. Moseley told me that his pilots know the desert better than the old prospectors who had lived on it most of their lives. When they are ahead of schedule due to favorable wind they wander off the course and look around. Moseley considers this good dope—if they ever have to sit down due to being forced off their course by storm or clouds they will be able to locate themselves quickly—at least they won't be in perfectly unknown country.

9:20 a.m.—A small settlement below us and, which interests me more, a big mountain square is in front of us. We are climbing as the mountains ahead are much higher than we are flying, almost 6,000 ft. I guess this is "Clark Mountain" that I heard Moseley say was to have a beacon on it. The Department of Commerce have a man out now lighting the airway between Los Angeles and Las Vegas. A new country looms up at 9:26 a.m. It is more abrupt and rougher than any we have seen, nothing but mountains, millions of them, ridge after ridge in every direction.

9:40 a.m.—Kelly nosed her down and pointed out a green spot fifteen minutes dead ahead which must be Las Vegas. Now let us see what has happened to the Los Angeles Limited which left Los Angeles the same time we did. We are approaching Las Vegas after 2 hr. in the air. The Limited is two hours out of Los Angeles approaching Colton, and has covered a distance of 65 miles, while we have made 334 railroad miles or about 235 air miles.

9:45 a.m.—Kelly starts gliding down into Las Vegas. There are mines to the right of us and mines to the left of us. The three or four on the left are below the most brilliantly painted cliffs we have seen. They are a bright clear red. No one who has not seen them would believe that such beauty exists in nature. At the North end of the cliffs Mt. Charleston arises to 11,000 ft., the highest mountain in Nevada.

We must have been miles in the air because it was cool and pleasant—now I feel the hot air of the desert, it is like flying

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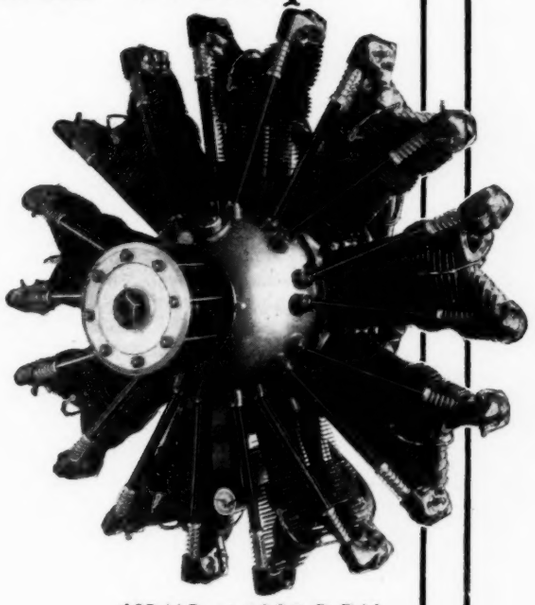

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down into a furnace. We land at 9:55 a.m.—2 hr. and 10 min. out of Los Angeles.

H. S. Thompson, Field Chief, E. A. Russel, radio operator and Ike Blum, watchman, are out to meet us. They say it is cool today—thermometer only 100. It is nice to stretch your legs again. As stated before, this is a gasoline, oil and radio station. The wireless towers and radio station are the only structures. There are no idle men around. I noted that the radio operator grabbed a gasoline hose and helped gas up. This company saves thousands of dollars per year by operating its own radio equipment. They use short wave sets, receiving and sending at all three stations, with an extra set at Los Angeles. Some of the dope sheets will probably assure you that such short wave sets won't work. These sets have never failed the Western Air Express to date.

Off to Salt Lake City

At 10:27 a.m., having gased and rested, we push off for Salt Lake City. Waving goodbye to the crew on the ground whose next duty is to receive the mail plane from Salt Lake about 2:30 p.m. Kelly had told me that he would fly slightly off the course so as to have a look at the proposed Boulder Dam Site on the Colorado River.

At 10:35 a.m., we are over the most amazing country—gray, yellow-ochre, pink, brown and red stipes. The country on all sides is broken up as though great steam shovels had gouged it out or as though mammouth pigs had been rooting all through it.

At 10:39 a.m. the brown, muddy Colorado is in sight. I can see the river off to the right, over mountain ranges for, what looks like 100 miles. Kelly informs me that the dam is to go where the river disappears between two mountains into a narrow rocky canon. The water will back up into that valley to the right making about 30 million acre feet of water.

We follow a branch of the river from the North until, at 11:20 a.m., it forks again and we take the right hand branch toward Zion National Park. Air passengers should, as in Europe, have specially made rolling maps that will name the interesting features of the ground. The top of my head is about to freeze. We must be well up although I think not over 7,500 ft. There are no instruments in my cockpit. The passengers should at least have an altimeter.

11:40 a.m.—Now let us check up again on the Los Angeles Limited. We are both 4 hr. out of Los Angeles. In the air we are opposite Zion Canon—off the railroad but about 510 railroad miles from Los Angeles and approximately 410 air miles. The Limited is about at Oro Grande—118 railroad miles out from Los Angeles. Perhaps you will remember that is where we crossed the Mojave River at 8:18 a.m. this morning—cement plant with three smoke stacks there.

At 12:23 a.m., Kelly asks me if I am hungry. I assure him that I am enjoying life too much to be hungry and incidentally it is a little too rough to eat. I don't like to place too much confidence in my stomach in such a rough sea.

At 1:30 p.m. Great Salt Lake in sight. Lots of mines on the hills to the right and left, with small towns near them. 1:40 a.m. False alarm, the lake on the right is too small for the great Salt Lake. Must be Utah Lake. 1:58 p.m.—I can see the terraced copper mine at Bingham to the left front, and the great Salt Lake is really ahead this time.

At 2:03 p.m. we arrive over the lake. Salt Lake City is visible to the right. We swing around, glide lower down. Kelly points out the Western Air Express Field. We glide on past over the town. Kelly banks her up and shows me the Mormon Temple with its flock of spires and the Tabernacle—all surrounded by a great wall. There is the business center—a real formidable skyline. We are getting lower and lower and my ears are ringing as usual when coming down from a few thousand feet rapidly. We pass over a race track with a big crowd watching races in progress. We circle around and land at Woodward Field at 2:15 p.m., by our watches—6 hr. and 30 min., after leaving Los Angeles! Capt. Stanley, Field Chief for the Western Air Express, met us.

When the air mail for Seattle leaves Salt Lake City in place of Elko—and I understand it is contemplated—Salt Lake City will be a great air terminal with lines East and West to Chicago and San Francisco, Southwest to Los Angeles and Northwest to Pasco for Seattle. So these people of Salt Lake are not exactly dreaming when they talk about making a great air center of their city.

But let us not forget the poor old Los Angeles Limited. It is struggling along back on the desert somewhere. It is 6½ hr. out of Los Angeles or at Baxter, 197 railroad miles from Los Angeles. In other words, the Los Angeles Limited has made only a little over one-fourth of the distance. To be exact we made the trip by air in 27 per cent of the time required by rail. As the rail takes 24 hr. and 19 min. the Los Angeles Limited will arrive tomorrow morning at 8:19 a.m.

I was deeply impressed with the operations of this, the first regularly operated air line upon which I had taken passage. Like all other airmen, I have dreamed of air lines like this one for the past ten years. But whenever the subject was mentioned outside of the inner circle there was always a chorus of pessimists present to assure you that it couldn't be done. Lines in Europe pay, but with a subsidy. Of course, a business that doesn't pay is no longer a business.

An Experienced Organizer

Corliss C. Moseley had already established himself in Los Angeles by organizing at Clover Field, Santa Monica, one of the first Air Service reserve squadrons and seeing that they were properly equipped and trained. Not satisfied with one air unit in Los Angeles, he organized an air service squadron of the California National Guard. This squadron he got completely equipped with flying field, hangars, airplanes, etc. I visited this activity while the squadron was undergoing its two weeks' training period in camp at the airdrome. The condition of their equipment and the general morale of this organization would be a credit to any regular Air Corps squadron in the United States. A man who can pay $10,000 out of a chamber of commerce for a National Guard squadron is some rotarian go-getter, in my very humble opinion.

A MODERN FLYING CARAVAN PARTY. The C[illegible] of the

Moseley, who is one of the best airmen produced by the War, had the business acumen to see the possibilities of an air mail line between Los Angeles and Salt Lake City. He saw that Mr. Ford's entry into aviation would break down the barriers of the financial world, and took advantage of this to interest Los Angeles capital. I am sure none of these men regret that they became interested. They have just moved their office from the eighth floor to the ground floor of the Garland Bldg., in Los Angeles. They now have a street entrance like any other railroad or express office. The shrewd Mr. Harris M. Hanshue, president and general manager, smiles and why shouldn't he? The Western Air Express is making money! I hope the other lines are having the same good fortune. The Western Air Express have no unnecessary and idle equipment—no unnecessary personnel. They are not trying to break speed records. The pilots are on a competitive economy of operation basis. I don't believe anyone can go over this line without being impressed with the solidity of the foundation upon which they are building. Predictions in aviation are dangerous. But I should like to hazard one more—when the smoke of this formulative period clears away you will find the Western Air Express with its network of air lines all over the West sitting on top of the heap.

Dusting the Gipsy Moth by Airplane

Experimental work in using airplanes for applying insecticides to control leaf eating insects was first undertaken by the United States Bureau of Entomology in the Summer of 1922. The results on field crops, including cotton, were very promising and further word has demonstrated the utility of this method. The experiments carried on during 1922 and succeeding years in treating forests for gipsy moth control were not very satisfactory, due to the extreme difficulty of applying this method to forest growth.

During the Spring of 1926 another series of tests were conducted in the gipsy moth infested area. The Government, through the Department of Agriculture, asked for bids for furnishing airplane service and the contract on low bid was awarded to the Curtiss Flying Service, Inc., of Garden City, N. Y. This contract called for the furnishing of an airplane, pilot and mechanical assistant, together with a hopper, suitable for spreading the dust, to operate for a period of approximately three weeks on Cape Cod, Mass. These experiments were planned and supervised by the Division of Gipsy Moth Investigations, Bureau of Entomology. The Curtiss Flying Service, Inc. supplied a four-passenger Standard, powered by a Curtiss C-6, 160 hp. engine. This plane was particularly adapted to the work because of its slow landing and flying speed and quick take-off with a load.

Arrangements were made with Alan Morse, of the Morse Agricultural service, with offices in New York and Cleveland, to supply the hopper and Mr. Morse, the inventor and manufacturer, went personally to Curtiss Field to oversee its installation in the airplane. This was the same hopper that was used for the experimental dusting of cranberries last year, though it had been strengthened and certain defects eliminated. The hopper itself proved generally satisfactory, particularly as regards the distribution of the dust, though certain defects, especially with the air pump, were experienced. However, these were not of a serious nature and can be easily overcome.

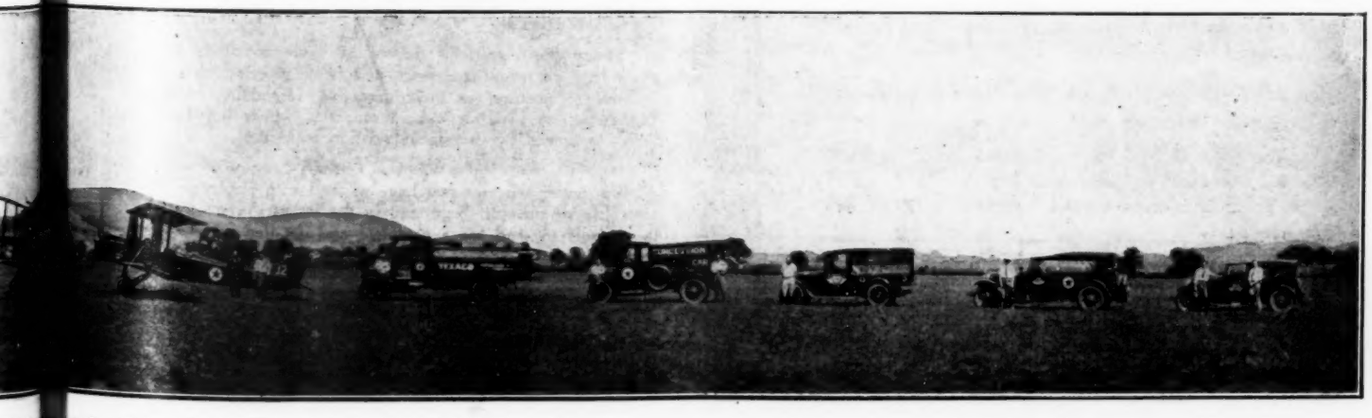
The plane left Garden City on July 8, piloted by J. P. Andrews, with Melvin Verheuy acting as mechanic. A flying base was established at Sandwich, Mass. and, while no hangar was available, the field was well laid out, properly marked and had such necessary instruments as the amemometer, wind cone and instruments to show the humdity, temperatures, etc. The Standard Oil Company of Boston supplied the gasoline and oil in drums directly to the field.

The experiments were carried on six different plots, each plot being approximately 1700 ft. long by 650 ft. in width and covering approximately twenty-five acres. The plots were located from four to twenty miles from the base and were picked out to cover different types of terrain and different growths of trees, so that information concerning the results on different growths could be determined. Two of these plots were dusted twice and four were dusted once, the dosages varying from thirty to fifty pounds of lead arsenate per acre.

Before the tests were started, it was thought that early morning would be the best time for the dusting. Weather conditions had to be practically ideal, as the wind could not be of greater velocity than five miles per hour. After conducting some tests it was found that the late afternoon and evening were better for the work than the morning, because of the greater humidity. The exact time of day is not so important as it is to have low wind velocity and high humidity.

Records were secured by the Bureau covering the amount of defoliation before and after treatment as compared with check plots, the effect of rainfall on adhesion of the poison to the foliage, evenness of distribution of the dust, effect of parasitism on the larval population and other factors of importance in connection with the experiment. Although the data has not been compiled for careful study, it is apparent that the results were more satisfactory than any that have heretofore been attempted by the Bureau on forest infestations. The flying conditions were far from ideal as practically all the plots had to be covered a few feet over the trees, which varied in height from twenty to fifty feet, and this meant that an engine failure would necessitate setting the plane down in the trees with a possible loss of the machine and probable injury to the pilot. The entire contract was completed in two weeks, during which period fifteen hours of actual dusting were done.

The Bureau officials were highly pleased with the results of the experiments and technical information will soon be available covering many of the details. The expense of this dusting will probably be greater than in the case of cotton or low growing vegetation, because the flying hazard is greater. The saving in time in treating large areas that are inaccessible and large areas that cannot be easily reached with other types of spraying equipment gives promise that this method may be further developed and utilized in forest areas in the future.



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Side Slips

By Robert R. Osborn

It is with great regret that we record the passing of another sportsman from amateur ranks into professionalism. The Intrepid Aviator was tinkering with his plane at the flying field the other day when someone closely answering the description of C. C. Pyle, manager of "Red" Grange, Susanne Lenglen, Vincent Richards and others, came along and offered our friend five dollars to be taken for a flight. After a heart-breaking debate with himself, as to whether or not he should give up his valued amateur status for even such large sums of money, our hero finally succumbed to the lure of gold. He claims he did it purely out of consideration for his Jenny, so that she may be properly taken care of in her old age,—the barnacles on the fuselage and the moss on the control surfaces having developed already to an alarming extent.

* * *

According to the papers, a prize of one thousand dollars has been posted as a reward for the first boy or girl, under eighteen years of age, who pilots an airplane from San Francisco to Boston. The prize seems to have been offered by the American Society for the Promotion of Aviation, which seems to be another one of "those things",—apparently organized for the sole purpose of giving a good title to some newspaper publicity. The offer probably will be a very safe one to make as it specifies that "participants must have licenses". If this means licensing under the proposed commercial regulations, it is an absolutely safe offer, as those regulations require that all pilots must be over eighteen years of age.

The custodians of this prize should examine carefully the credientials of any candidates who present themselves from Georgia, New York and California. Bobby Jones, of Atlanta, Ga., was the "eighteen year old golf marvel" for some five years, and as far as we know, Vincent Richards, of New York and Helen Wills, of California, never did grow up.

Just when we were beginning to think that we had the matter definitely settled and off the books, someone else comes along in the Oct. 11 issue of AVIATION and claims to have delivered the first electric stove by airplane. If we remember correctly, this is the sixth electric stove that has been delivered for the first time in aeronautical history. It must have been quite a squadron of planes flying that first order of stoves.

* * *

A friend of ours saw a recent test flight for a new light monoplane and reports that during the first half hour's flight, about a gallon of gas and a pint of Long Island whiskey were consumed. He adds that this was not nearly the full capacity of either plane or pilot.

* * *

This week's prize for futility and optimism is herewith unanimously awarded to the Rolls-Royce Motor Car Company's American representative, for his recent letters in which he attempts to sell us one of those fine cars. We, also, are waiting patiently for the boom in commercial aviation, but do not expect to be in a position to consider one of these cars until this boom has been in full force for about three weeks.

* * *

Having seen, for the first time, the pictures of the airplane which was recently landed successfully by means of a parachute, we are reminded of the expression occasionally used by the medical profession, "The operation was a success, but the patient died".

Daylight at Night

produced by B. B. T. five hundred million candle power floodlight at National Air Races. Model Farms. Philadelphia.

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AIRPORTS AND AIRWAYS

Riverside, Cal.

By J. S. Hammond

As has been the case with the majority of cities, aviation is being recognized by the "slow but sure" process in Riverside. However, the response has been very encouraging. The Riverside Airport, with pilot Roman C. Warren in charge, will soon have completed one year of active service as a recognized air terminal, having been established by Mr. Warren in November, 1925. Warren is credited with having done much as a pioneer in the commercial side of flying in Riverside and has met numerous obstacles and problems in gaining his end. At the present time there are five planes with headquarters at the airport and three pilots, Roman C. Warren, Clifford Martin and Wesley Gray, flying from the field.

Every effort is being made to finance hangars and equipment before the rainy season and, although many original ideas and plans are on record to make the field a first class one, financial assistance is to some extent lacking.

The present dimensions of the field, with Southwest runway, are 500 ft. by 2500 ft. The location is remarkable for a town field. It is situated on the Los Angeles-SanDiego inland highway, near the Santa Ana River bridge and Mt. Rubidoux. It is half a mile from the business section of Riverside and has a complete service station with light lunch counter and telephone directly across the highway.

Another Stolen Airplane

The Boston police are on the lookout for a stolen airplane, piloted by a man with a cork leg and wearing a straw hat. The plane was stolen from Iola Field, Kansas. Its description, with that of the pilot, is contained in a circular from Sheriff Custer Davis of Iola, Kan.

"We will pay $50 for return of the plane and $50 for the arrest and conviction of the thief", said Sheriff Davis. The plane is of three-passenger type with 150 hp. engine. The thief is a good pilot and "very bold", according to the Kansas sheriff.

Colombian Air Service

Air mail and passenger service between Girardot and Neiva, Colombia, established under a contract entered into between the Colombian Government and the Compania Colombo-Alemana de Transportes Aeros (Colombian-German Aerial Transportation Co.). A translation of the contract may be obtained from the Transportation Division by referring to Report No. 222,842.

Air Traffic Increases in Finland

Air traffic in Finland has shown noteworthy development during the summer. By the end of July, the airplanes on the

Light your Airport

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GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL PRINCIPAL CITIES

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Ready for immediate use, and offering an opportunity to equip a flying field, cross country service, air-line or Air Mail feeder line at minimum expense. Originally built for London-Paris service. Excellent performance; best construction; ships have been well cared for. Offered for sale following replacement with Pitcairn planes. Price includes the complete equipment.

Landing speed is slower and take-off quicker than JN.

Speed 40 to 120 m.p.h.

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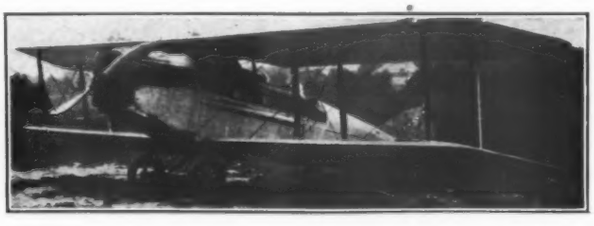

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New Clipped wing Standards with used OX5 motors installed	$800.00
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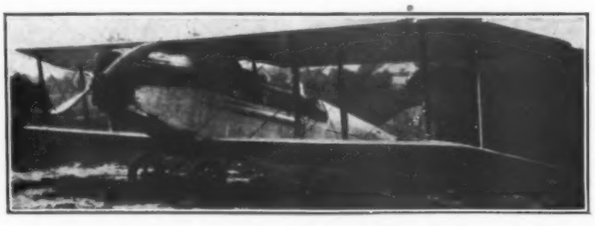

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Lawrence, Kansas

By Larry Allison

We had a visit recently from "Lucky Jack" Merrill of St. Louis and Tilden Johnson of Guymon, Okla., who are on a barnstorming trip to Texas and points South.

George Harris who has been making parachute jumps and walking wings in Minnesota and North Dakota is back in town. George weighs 185 lb. now and used a 32 ft. 'chute to keep from knocking holes in the earth's crust. He is counting on me holding him up at the overhang masts of Wray's Hisso Jenny at the Haskell Indian Pow Wow and Celebration. Hope he watches his diet in the meantime.

Inquiries are coming in from all parts of the country about the School of Airplane Construction which will be carried on this winter by the Allison Airplane Co. This should be another factor in helping the airplane industry expand next year.

Harry Frey of DuBois, Nebr. writes that the high lift wing plane I delivered to him this spring suffered a slight accident when his wife, who never had any flying lessons, opened the throttle and took off through a fence. A broken longeron and damage to the nose cowling were the only effects. Mrs. Frey and the wings came through unhurt.

It looks like the new Federal law requiring a climb of 400 ft. per minute might be intended to eliminate the Jenny, Canuck and Standard. While some of the older planes that are in bad condition will no doubt be scrapped, a lot of the ships will be fitted with high lift wings, and in some cases streamlined, making them meet the new requirements with ease and bringing many another dollar into the old tobacco box of their thrifty owners. It is really surprising when making a trip around the country to see how many Jennies are still working, and this holds in the East as much as out here, I can say from personal observation. There are, of course, a lot of Wacos, Swallows and Travel Airs, too.

Harvey Dyer who was with us last summer and held a reserve pilot's commission, is no longer here. He's in the Army now.

New Junker Plane With Twenty Berths

A new Junker's double-decked superplane with a surface measurement of 109 square yards, is being tried out in Germany on a series of test flights.

The body of this giant is nine feet ten inches wide and comprises two platforms with a cabin spacious enough for twenty beds as well as for heavy baggage. Adjoining, there is a special freight compartment for the shipment of express freight, the absence of which hitherto has been found a vital shortcoming in international air service.

Another innovation is an auxiliary engine room with a separate motor for lighting, for the accelerated filling of tanks, wireless and other services.

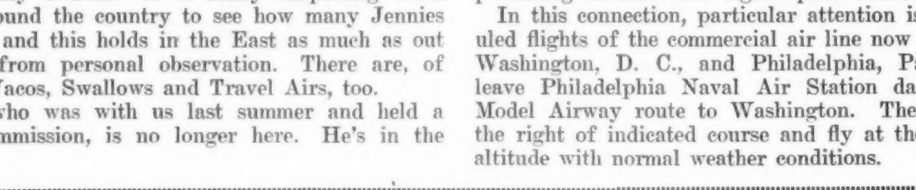
The latest hangars, still in process of construction, are inadequate in size for the new superplanes, which have to be parked out of doors.

United States Air Forces

Maps Available for Model Airway

Calling attention to the increased traffic over the Model Airway, the office of the Chief of Air Corps has announced that air navigation maps are now available for all sections of the Model Airway and pilots will hold their course to the right of the broken red line indicated on maps, maintaining a constant vigilance for other aircraft, particularly during inclement weather when visibility is difficult. Passengers, except in enclosed aircraft, will also be directed to watch for approaching aircraft and signal pilot accordingly.

In this connection, particular attention is invited to scheduled flights of the commercial air line now operating between Washington, D. C., and Philadelphia, Pa. P.R.T. planes leave Philadelphia Naval Air Station daily, following the Model Airway route to Washington. These planes keep to the right of indicated course and fly at the 1500 ft.-2000 ft. altitude with normal weather conditions.



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Propeller hub puller assemblies $1.50, Socket wrench crank shaft nut $.30, socket wrench propeller hub nut $.30, water pump pack nut wrench $.30, Thrust bearing lock nut wrench $.30, crank shafts $7.50, Cylinder flange gaskets $.05. Complete set 80 OXX6 or OX5 gaskets $3.00, Complete set 20 hose, $1.25, Brand new OXX6 cylinders $15.00, Complete set used valve actions overhauled and rebushed, with new hose, and good as new, for complete motor $45.00.

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New Advisory Air Coordination Committee

The Department of War has just announced that an Advisory Air Coordination Committee is to be created, consisting of the assistant Secretaries for aviation in the Department of Commerce, War and Navy, which shall recommend general policies relating to the air activities of the Government.

Creation of the committee it was explained was at the suggestion of Dwight F. Davis, Secretary of War. The announcement by the department follows in full:

At the suggestion of the Secretary of War, Hon. Dwight F. Davis, there is to be created a committee to be known as the Advisory Air Coordination Committee, the membership of which shall be the Assistant Secretary of War (for aviation), the Assistant Secretary of Navy (for aviation), and the Assistant Secretary of Commerce (for aviation). The duty of this committee shall be to recommend to the Secretaries of War, Navy and Commerce, general policies relating to the coordination of the air activities of the Government.

In addition to the newly-formed committee, there are already in existence three other agencies for coordinating the air activities of the Government. These are: The National Advisory Committee for Aeronautics, which is composed largely of civilian technical experts of the Government; the Aeronautical Board, composed of three representatives from the Army and three from the Navy, headed by the Chief of the Army Air Corps and the Chief of the Naval Bureau of Aeronautics; and the Joint Army and Navy Board, which is composed of the Chief of Staff of the Army; the Deputy Chief of Staff of the Army; Assistant Chief of Staff, War Plans Division, General Staff of the Army; the Chief of Operations, of the Navy; the Assistant Chief of Operations of the Navy and the Director of the Planning Division of Naval Operations.

Aviation Duty for Line Officers

As a further step toward coordinating the Army Air Corps with other branches of the service Secretary Davis has ordered a tour of aviation duty for line officers. This will bring many of the older men into contact with the fliers without necessarily meaning that they will learn to fly.

It is explained that the aviation assignment, which will be from two to three months to one year, will make all officers familiar with the work of the Air Corps and familiarize fliers with the older branches.

Every grade of the Air Corps now has several vacancies, and officers especially qualified for flying may be detailed for permanent duty. Those so qualified have been urged to apply for transfers.

Ordnance Demonstration at Aberdeen

A demonstration of post-war ordnance developments took place at Aberdeen Proving Ground, Md., Oct. 8. The demonstrations included firing of the latest anti-aircraft equipment of the Army. The occasion was the Eighth Annual Meeting of the Army Ordnance Association, of which Benedict Crowell, of Cleveland, former Assistant Secretary of War and Director of Munitions during the World War, is President.

Assistant Secretary of War for Aeronautics F. Trubee Davison was among the guests who witnessed the demonstration.

Naval Air Station, Pensacola

The wreckage from the hurricane of Sept. 20 has practically been removed from the station grounds, and the runways which were not damaged are being cleared and made ready for service. This work is in the hands of the station personnel who are making repairs with funds available so the training of aviators may be resumed.

Six observation planes for training have been flown from Hampton Roads by fliers from the Scouting Fleet, to replace in part the training planes rendered unserviceable. Forty-seven of the 230 planes at the air station were destroyed. The majority of these were of an obsolescent type originally built during the war.

Lieutenant Commander R. H. Gifford, Civil Engineer Corps, U.S.N., is at Pensacola completing the estimate of appropriations necessary to restore public works. A report, filed

in the Department by the Commandant of the air station, lists eight buildings completely destroyed, runways on the east and southeast part of the station rendered inaccessible, all paving, railway tracks and seventy-five percent of the fill at three piers washed out and damage of major character to roofs, windows, etc. The total area suffering serious damage amounts to about twenty-five percent of the entire station. The Bayou Grande Bridge was temporarily put out of commission, but a bridge to replace it for the time being was constructed in five days.

An estimate sent to the Navy Department by the Commandant, immediately after the disaster, stated that not less than one million dollars was necessary to restore public works to former usefulness and not less than double that amount to make the station reasonably secure against similar damage in the future.

The problem of continuing training of the present class at Pensacola has been temporarily solved. The present class of officers and enlisted men will be delayed beyond Nov. 30, its proposed graduation date. The date of entrance for the new class has been postponed from Nov. 1 to Jan. 1. The damage resulting from the hurricane will modify a proposed system of training, which contemplated the instruction of four classes a year in place of the two classes now trained each year. The new system of training was to be carried out by staggering two classes, dividing the ground and flight instruction periods in a manner which would utilize fully the hours available for flying. The average days per year in which flying conditions are possible at Pensacola number 239. In the last five years 350 naval aviators have been trained at Pensacola. This represents those who have qualified. Of the 83 who started training in the present class, 38 qualified for further advanced training.

Sec. Warner Returns From Inspection Tour

Edward P. Warner, Assistant Secretary of the Navy for Aviation, returned to Washington on Sept. 30 from an inspection trip to the naval air stations and the battle fleet of the Pacific Coast. The Assistant Secretary left Washington on this trip on Sept. 9.

Since he took office on July 12, Mr. Warner has visited every naval air station in continental United States, and the battle fleets on both the Atlantic and the Pacific.

After inspecting the naval stations at Great Lakes, Ill.; Bremerton, and Sand Point, Wash.; San Francisco and San Diego, Calif., as well as aircraft factories at Seattle and Los Angeles, Secretary Warner went abroad the U.S.S. Langley and was flown off and landed again on the deck of the airplane carrier.

He made a flight in the PB-1 from San Diego to San Pedro and went aboard the U.S.S. California. As a guest of the commander-in-chief of the Battle Fleet, Admiral Richard H. Jackson, U.S.N., Secretary Warner witnessed general tactical maneuvers of all forces of the fleet. During the maneuvers he was catapulted in an observation plane from the California and for two hours watched the maneuvers from the air.

Expressing himself as greatly impressed with the progress that had been made in the adaption of aircraft to the needs of the fleet and in their operation with the fleet, especially from the carrier deck and from catapults, Secretary Warner said:

"I wish that it were possible for everyone interested either in naval affairs or in aeronautical progress to see at first hand how aerial operations are carried on by the Navy. The specialized problems of equipping for service flying at sea have been grappled with and solved with wonderful success.

"We have emerged from the experimental period to such a degree that the major problem now is keeping up procurement of aircraft to a level sufficient to insure at all times that the urgent demands of the fleet for continued aviation service will be met with machines incorporating recent advances in the aeronautical art.

"Procurement of equipment and the training of personnel in adequate numbers so that this important work will at no time be in danger of being starved for lack of pilots, are necessities which we must keep at all times urgently before us."

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"The complete ease that the plane showed in handling a full load, taking off at high altitudes, was surprising, to say the least. The highest place I believe was 6200 feet.

"Believe me I'm doing all I can to boost for Travel Airs and I'm sure that any future additions to our line in planes of that class will be Travel Airs. For I can conscientiously say that they are the best job I've ever flown."

—o—

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Captain Steele Gives Up Air Duty

Capt. George W. Steele, U.S.N. former commandant at the Naval Air Station at Lakehurst, N. J., has left the Naval Air Service and is in command of the United States Cruiser Pittsburgh which has just left New York for duty in Chinese waters.

Captain Steele was aboard the dirigible Los Angeles when it flew from Germany to the United States and commanded the Los Angeles for some time.

Army Air Orders

Sec. Lieut. Turner Ashby Sims, Jr., Air Corps, transferred to Eng. Corps. Lieut. Turner is relieved from further attachment to Sec. Div., and is assigned to engineers of that division, and will report in person to commanding general Fort Sam Houston.

Sec. Lieut. Robert Eugene Mousseau Des Islets, Air Corps, transferred to Corps of Eng. Lieut. Islet is relieved from further attachment to Sec. Div., and is assigned to Eng. Corps of that division, and will report in person to commanding general Fort Sam Houston.

First Lieut. Rufus B. Davidson, Air Corps , Georgia Sch. of Tech., Atlanta, to New York City, sailing on transport Dec. 2 for Canal Zone.

First Lieut. Clarence H. Schabacker, Air Corps (Coast Art. Corps), Lakeland, Fla., relieved from assignment in Air Corps, and Air Corps Prim. Fly. Sch., Brooks Field, and is assigned to 51st Coast Art. Upon expiration of leave of absence he will proceed to Fort Eustis, Va., for duty.

Sec. Lieut. Richard W. Gibson, Air Corps, Adv. Fly. Sch., Kelly Field, to commanding officer that station for duty.

Capt. Porter Shipley Stover, Air Corps Res., Beverly Hills, Cal., to active duty Rockwell Field, reverting to inactive status Oct. 31.

First Serg. James B. Weaver, Air Corps, Kelly Field, placed on retired list.

Capt. Rosenbaum Beam, Air Corps, Kelly Field, to Duncan Field.

First Lieut. Adolphus R. McConnell, Air Corps, Langley Field, to Marshall Field.

Navy Air Orders

Lieut. Comdr. Ralph E. Dennett det. Off. Nav. Oper., Navy Dept., to temp. duty Nav. Air Sta., Pensacola.

Lieut. Roland G. Mayer det. Nav. Air Sta., Lakehurst, to USS Los Angeles.

Lieut. Comdr. Francis M. Maile det. command V. O. Sqd. 1, Aircraft Sqdns., Battle Flt., to command V. O. Sqd. 2.

Comdr. Albert C. Read det. Aircraft Sqdns., Battle Flt., to command Nav. Air Sta., New Orleans.

Lieut. (jg) Rhea S. Taylor to duty with Aviation Detach. of VO Sqdn. 4, Aircraft, Sqdns., Battle Flt.

Ensign Harrison B. Southword det. Nav. Air Sta., Pensacola, to USS Nokomis.

Lieut. George T. Hassell det. USS S-7, to continue treatment Nav. Hosp., San Diego.

Ensign Edward P. Creehan det. Nav. Air Sta., Pensacola, to USS Sapelo.

Lieut. Chem H. Congood det. Bur. Aeron., to Inspr. of Nav. Inspr. of Ord. Cleveland.

Lieut. Lawrence B. Richardson (CC) det. Inspr. of Nav. Airef., Cleveland, to Nav. A. Sta., San Diego.

Lieut. (jg) William C. Allison det. VF Sqd. 1, Aircraft, Sqdns., Battle Flt., to Nav. Air Sta., Pearl Harbor.

Marine Corps Air Orders

First Lieut. J. N. Smith det. N. A. S., N. O. B., San Diego, to Chanute Field.

First Lieut. J. D. Swartwout det. N.A.S., Pensacola, to M.B., Quantico.

Sec. Lieut. G. M. Britt relieved from duty under instruction in aviation at N.A.S., Pensacola, and assigned to duty at the M.B., N.A.S., Pensacola.

Sec. Lieut. A. V. Gerard det. M.B., N.A.S., Pensacola, to M.C.B., N.O.B., San Diego.

Capt. S. H. Appleby, Marine Corps Res., assigned Oct. 4 to active training at N.A.S., Lakehurst, and relieved Oct. 18.

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PUBLISHER'S NEWS LETTER

There has been much discussion of the proper course to pursue during the coming year for those who have the best interest of American aviation at heart. This period usually means the winter season, as the flying years are considered as dating from summer to summer. Last winter was one of the most significant periods that has ever been known in this country. All the problems confronting the aeronautical interests whether governmental, industrial or commercial were given a hearing and some kind of a solution secured. The government services had their opportunity to thrash out before powerful boards all the various controversies that had made it so difficult for impartial observers to consider without a feeling of doubt as to the fundamental soundness of the system of administration heretofore in force. The aircraft industry, too, had an opportunity to have the obstacles that confronted it given hearings and a definite policy announced by all the services. The commercial aviation operators had their hearings also and the new Civil Aviation Act was the result. The Morrow Board and the Lampert Committee went over all the ground that had any possibility of offering any suggestive helps to the very complicated government administrative problem of dealing with aircraft. With all this compressed into one short period, it would appear to those who take a broad point of view that the less done to stir up the aircraft problem this year will be the better policy.

* * * *

By this it should not be inferred that anyone is satisfied with the situation as it exists at present. That would be taking too optimistic a view, but that progress was made there can be no doubting, and this progress will continue for at least one year it is believed, if the present plan is left to work for a reasonable length of time, unhampered by criticism. After that, there will be time to start agitating for the next step if it is necessary. The Army under the capable guidance of Asst. Secy. for Air Trubee Davison will show how genuine is its desire to build up the Army Air Corps. The Navy will have someone in the Department, Asst. Secy. Warner, who will be thinking in aviation terms only and will be able to fight the old influences that appear to have at last accepted wholeheartedly the aerial newcomer. The Department of Commerce, under Asst. Secy. MacCracken will have had an opportunity to put into effect the new regulations and show how its efforts to encourage aeronautics in this country have been successful. The Air Mail, under the Second Asst. P.M.G., Mr. Glover, will either have turned over the transcontinental air mail route to private operators or found that this line is not as yet ready for commercial operation. The aircraft industry will have had a year to get on a sound basis with continuing orders of a substantial volume. The operators of air lines will know after the winter season more of the difficulties and obstacles that must be overcome to make commercial aircraft operation a success. All in all, this year promises to be one of many experiments and during experimental periods it is not wise to be too critical. Results are the only things to be valued and appraised, and unless the present plans are given a fair opportunity, there will be the danger of blaming the lack of accomplishment on the criticism.

* * * *

The public is tired of squabbles in the aviation household. Without the widespread feeling that aircraft was not getting a fair share of encouragement there would not have been the great advances made last year. But there has been created by influences, that are too strong to be counteracted, a public sentiment that, at last, there has been a plan evolved that will meet all the criticism that has been leveled at the older conditions. With this admitted and recognized as a fact the suggested period of quiet will be an obvious result. Then, if the present regime does not produce all the results that the public has been led to expect of it, the reaction will be all the more favorable for the next step. What this move will be, no one can venture to predict now, except that it will inevitably tend to greater and greater centralization.

* * * *

The one point to be watched is whether or not the new plan brings about less duplication, greater cooperation and less expensive competition. If it makes for improvement in these directions, some gains will have been made but if there is not a substantial gain shown, then the claims of those who believe in complete independence for the air forces of the government will have to be restated in the light of the new experiments. The aircraft equipment of the government will also have to be reappraised in the light of the five year program, if Congress appropriates the necessary money to carry this forward. The growth of commercial aviation under the fostering care of the Department of Commerce will be one of the year's greatest achievements if the promises of the proponents of the new Bureau are to be made good. For these reasons it seems to many that during the coming session of Congress and until next Fall, the most tactful plan will be to let the new procedure have a clear right of way and not be hindered by having its energies diverted to defending, rather than building.—L.D.G.

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